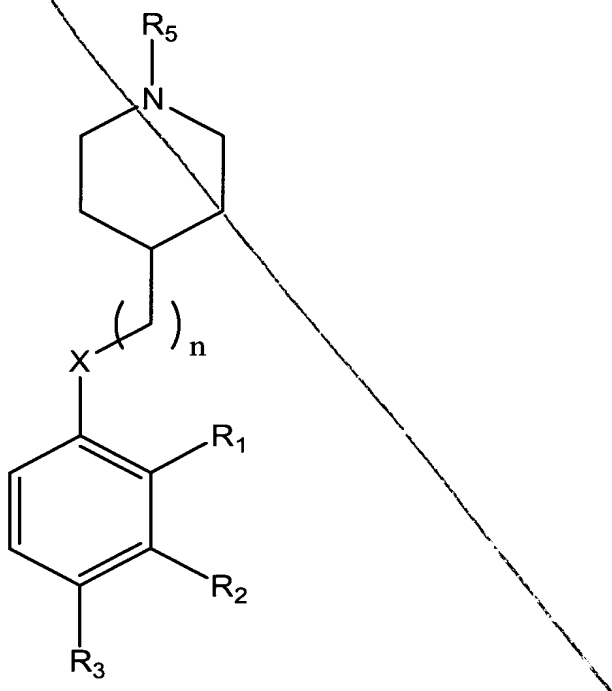
CLAIMS

1. A compound of formula (I):



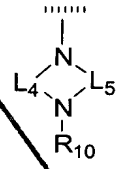
wherein X is O;

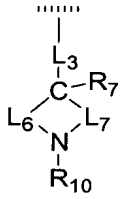
n is an integer from 0 to 3;

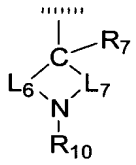
R_5 is C_{1-10} alkyl, C_{3-8} alkenyl, C_{3-8} cycloalkyl, (C_{3-8} cycloalkyl) C_{1-6} alkyl, (phenyl)C_{1-6} alkyl, (phenyl)C_{3-8} alkenyl, or (C_{1-8} alkylcarbonyl)C_{1-8} alkyl;

one of R_1, R_2, and R_3 is G or W, wherein one of the remaining two is selected from H and halogen, and the third being hydrogen;

G is a nitrogen-containing group selected from one of the following:
$-OL_1Q$, $-L_2Q$, $-N(L_1Q)R_5$, $-L_3C(L_1Q)R_6R_7$, $-C(L_1Q)R_6R_7$,


(i)


(ii)


(iii)

wherein:

L_1 is C_{2-6} alkylene, C_{3-8} cycloalkylene, C_{4-6} alkenylene, C_{4-6} alkynylene, C_{2-5} alkanoyl, (phenyl)C_{1-6} alkylene, (naphthyl)C_{1-6} alkylene, (C_{2-5} heteroaryl)C_{1-6} alkylene, (phenoxy)C_{1-6} alkylene, or (C_{2-5} heteroaryloxy)C_{1-6} alkylene;

L_2 is C_{1-6} alkylene, C_{3-8} cycloalkylene, C_{3-6} alkenylene, C_{3-6} alkynylene, C_{2-5} alkanoyl, (phenyl)C_{1-6} alkylene, (naphthyl)C_{1-6} alkylene, (C_{1-5} heteroaryl)C_{1-6} alkylene, (phenoxy)C_{1-6} alkylene, (C_{1-5} heteroaryloxy)C_{1-6} alkylene, or (C_{1-5} heteroarylthio)C_{1-6} alkylene;

L_3 is C_{1-6} alkylene, C_{2-6} alkenylene, C_{2-6} alkynylene, C_{2-5} alkanoyl, (phenyl)C_{1-6} alkylene, phenyl, naphthyl, (naphthyl)C_{1-6} alkylene, C_{1-5} heteroaryl)C_{1-6} alkylene, (phenoxy)C_{1-6} alkylene, (C_{1-5} heteroaryloxy)C_{1-6} alkylene, or C_{2-5} heteroaryl;

L_4 is C_{1-5} alkylene;

L_5 is C_{1-5} alkylene;

L_6 is C_{1-5} alkylene;

L_7 is C_{1-5} alkylene or absent;

Q is $-NR_8R_9$ or a non-aromatic C_{2-15} heterocyclyl ring system containing at least one nitrogen atom and optionally between 1 and 3 additional heteroatoms selected from O, S, and N in each ring;

R_6 is independently selected from hydrogen, C_{1-8} alkyl, C_{1-6} alkoxy, C_{2-8} alkenyl, C_{3-7} cycloalkyl, (C_{3-7} cycloalkyl)C_{1-6} alkylene, C_{2-15} heterocyclyl, and (C_{2-7} heterocyclyl)C_{1-6} alkylene;

R_7 is H, hydroxyl, halo, C_{2-6} alkoxy or absent where the carbon linking L_6 and L_7 (or bonded to R_6) participates in a double bond;

each of R_8 and R_9 is independently selected from hydrogen, C_{1-6} alkoxy, C_{1-8} alkyl, C_{3-8} alkenyl, C_{3-7} cycloalkyl, (C_{3-7} cycloalkyl)C_{1-6} alkylene, C_{2-15} heterocyclyl, phenyl, (C_{2-15} heterocyclyl)C_{1-6} alkylene, and (phenyl) C_{1-6} alkylene;

R_{10} is H, C_{1-8} alkyl, C_{3-8} alkenyl, C_{3-7} cycloalkyl, (C_{3-7} cycloalkyl)C_{1-6} alkylene, (C_{2-15} heterocyclyl)C_{1-6} alkylene, or (phenyl) C_{1-6} alkylene;

W is -CN, -CHO, halogen, C_{1-8} heterocyclyl, (C_{1-8} heterocyclyl)-O-, phenoxy, phenyl, (phenyl)C_{1-6} alkylene-O-, $-C(=O)R_x$, $-C(OH)R_xR_y$, C_{1-8} alkyl, C_{1-8} cycloalkyl, or $-NR_xR_y$;

wherein each of R_x and R_y is independently selected from H, C_{1-6} alkyl, C_{1-6} alkanoyl, C_{1-8} heterocyclyl, and phenyl;

wherein each of the above alkyl, alkylene, alkenyl, alkenylene, alkynyl, alkynylene, heterocyclyl, cycloalkyl, and aryl groups may each be independently and optionally substituted with between 1 and 3 substituents selected from halo, amino, nitro, hydroxyl, and C_{1-3} alkyl;

wherein substituents of Q can be further selected from carboxamide, C_{2-6} alkyl, C_{1-8} heterocyclyl, $N(C_{1-6}$ alkyl)(C_{1-8} heterocyclyl), $NH(C_{1-8}$ heterocyclyl), (C_{1-3} alkylene)(C_{1-8} heterocyclyl), $O(C_{1-8}$ heterocyclyl), $O(C_{1-6}$ alkyl), $O(C_{3-6}$ cycloalkyl), phenyl, (C_{1-3} alkylene) phenyl, $N(C_{1-6}$ alkyl)(C_{1-3} alkylene) phenyl, and $O(C_{1-3}$ alkylene) phenyl where each of above heterocyclyl, phenyl, and alkyl groups may be optionally substituted with from 1 to 3 substituents independently selected from halogen, nitro, cyano, and C_{1-3} alkyl;

or a pharmaceutically acceptable salt, ester, or amide thereof.

2. A compound of claim 1, wherein R_5 is C_{1-5} alkyl, C_{3-4} alkenyl, C_{3-6} cycloalkyl, (C_{3-6} cycloalkyl) C_1alkylene, (phenyl)C_{1-3} alkylene, or (phenyl)C_{3-4} alkenylene.

3. A compound of claim 2, wherein R_5 is branched C_{3-5} alkyl, C_{3-6} cycloalkyl, and (C_{3-6} cycloalkyl)C_1 alkylene.

4. A compound of claim 1, wherein one of R_2 and R_3 is G.

5. A compound of claim 4, wherein R_2 is G.

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6. A compound of claim 4, wherein R_3 is G.

7. A compound of claim 1, wherein L_1 is C_{2-3} alkylene.

8. A compound of claim 1, wherein L_2 is C_{1-6} alkylene, (C_{1-5} heteroaryl)C_{1-6} alkylene, or -phenyl-C_{1-6} alkylene.

9. A compound of claim 8, wherein L_2 is methylene.

10. A compound of claim 1, wherein L_3 is ethylene, vinylene, ethynylene, and phenylene.

11. A compound of claim 1, wherein Q is a non-aromatic nitrogen-containing C_{2-5} heterocyclyl.

12. A compound of claim 11, wherein Q is selected from piperidyl, N-(C_{1-6} alkyl)piperazinyl, piperazinyl, pyrrolinyl, pyrrolidinyl, and morpholinyl.

13. A compound of claim 11, wherein Q is N-morpholinyl or N-piperidinyl, optionally substituted with between 1 and 3 substituents selected from hydroxyl, carboxamide, C_{1-6} alkyl, C_{1-8} heterocyclyl, N(C_{1-6} alkyl)(C_{1-8} heterocyclyl), NH(C_{1-8} heterocyclyl), (C_{1-3} alkylene)(C_{1-8} heterocyclyl), O(C_{1-8} heterocyclyl), O(C_{1-6} alkyl), O(C_{3-6} cycloalkyl), phenyl, (C_{1-3} alkylene) phenyl, N(C_{1-6} alkyl)(C_{1-3} alkylene) phenyl, and O(C_{1-3} alkylene) phenyl where each of above heterocyclyl, phenyl, and alkyl groups may be optionally substituted with from 1 to 3 substituents independently selected from halogen, nitro, cyano, and C_{1-3} alkyl.

14. A compound of claim 13, wherein Q is substituted with a substituent comprising a C_{1-6} heterocyclyl group selected from: pyridyl, pyrimidyl, furyl, thiofuryl, imidazolyl, (C_{1-6} alkyl) imidazolyl, oxazolyl, thiazolyl, 2,3-dihydro-indolyl, benzimidazolyl, 2-oxobenzimidazolyl, (C_{1-6} alkyl) tetrazolyl, tetrazolyl, (C_{1-6} alkyl) triazolyl, triazolyl, (C_{1-6} alkyl) pyrrolyl, and pyrrolyl.

15. A compound of claim 14, wherein Q is a substituted or unsubstituted N-morpholinyl.

16. A compound of claim 1, wherein Q is NR_8R_9 wherein each of R_8 or R_9 is independently selected from hydrogen, C_{1-8} alkyl, C_{3-8} alkenyl, C_{3-7} cycloalkyl, (C_{3-7} cycloalkyl)C_{1-6} alkylene, C_{2-5} heterocyclyl, phenyl, (C_{2-5} heterocyclyl)C_{1-6} alkylene, and (phenyl) C_{1-6} alkylene.

17. A compound of claim 16, wherein one of R_8 and R_9 is hydrogen.

18. A compound of claim 17, wherein R_8 is H and R_9 is phenyl or aromatic C_{1-8} heterocyclyl optionally substituted with 1-3 substituents selected from halo, nitro, cyano, and C_{1-3} alkyl.

19. A compound of claim 18, wherein R_9 is phenyl, pyridyl, pyrimidyl, furyl, thiofuryl, imidazolyl, (C_{1-6} alkyl) imidazolyl, oxazolyl, thiazolyl, 2,3-dihydro-indolyl, benzimidazolyl, 2-oxobenzimidazolyl, (C_{1-6} alkyl) tetrazolyl, tetrazolyl, (C_{1-6} alkyl) triazolyl, triazolyl, (C_{1-6} alkyl) pyrrolyl, and pyrrolyl.

20. A compound of claim 18, wherein R_5 is C $_{1-5}$ alkyl, C $_{3-4}$ alkenyl, C $_{3-6}$ cycloalkyl, (C $_{3-6}$ cycloalkyl) C $_{1}$alkylene, (phenyl)C $_{1-3}$ alkylene, or (phenyl)C $_{3-4}$ alkenylene.

21. A compound of claim 1, wherein n is 0 or 1.

22. A compound of claim 21, wherein n is 0.

23. A compound of claim 1, wherein G is selected from:
(4) formula (i) wherein L_4 and L_5 are independently selected from C $_{2-3}$ alkylene,
(5) formula (iii) wherein L_6 is C_{2-3} alkylene and L_7 is C $_{2-3}$ alkylene or absent,
(6) L_2Q wherein L_2 is C $_{1-6}$ alkylene, phenyl C $_{1-4}$ alkylene, or (aromatic C $_{1-5}$ heterocyclyl)C $_{1-4}$ alkylene, and
(7) OL_1Q wherein L_1 is C $_{2-3}$ alkylene.

24. A compound of claim 23, wherein G is selected from:
(8) formula (i) wherein L_4 and L_5 are each C_2 alkylene,
(9) formula (iii) wherein each of L_6 and L_7 is C_2 alkylene, and
(10) L_2Q wherein L_2 is methylene.

25. A compound of claim 24, wherein G is L_2Q.

26. A compound of claim 23, wherein R_{10} is H, branched C $_{3-6}$ alkyl, or benzyl.

27. A compound of claim 26, wherein R_{10} is isopropyl or benzyl.

28. A compound of claim 23, wherein Q is a non-aromatic C_{2-5} heterocyclyl.

29. A compound of claim 28, wherein Q is selected from piperidyl, N-(C_{1-6} alkyl)piperazinyl, piperazinyl, pyrrolinyl, pyrrolidinyl, and morpholinyl.

30. A compound of claim 24, wherein Q is a non-aromatic C_{2-5} heterocyclyl.

31. A compound of claim 30, wherein Q is selected from piperidyl, N-(C_{1-6} alkyl)piperazinyl, piperazinyl, pyrrolinyl, pyrrolidinyl, and morpholinyl.

32. A compound of claim 25, wherein Q is selected from piperidyl, N-(C_{1-6} alkyl)piperazinyl, piperazinyl, pyrrolinyl, pyrrolidinyl, and morpholinyl.

33. A compound of claim 23, wherein R_5 is C_{1-5} alkyl, C_{3-4} alkenyl, C_{3-6} cycloalkyl, (C_{3-6} cycloalkyl) C_1alkylene, (phenyl)C_{1-3} alkylene, or (phenyl)C_{3-4} alkenylene.

34. A compound of claim 23, wherein R_7 is hydroxyl, halo, or absent where one of L_6 and L_7 provides a double bond to the carbon atom to which R_6 and R_7 are attached.

35. A compound of claim 1, wherein one of R_2 and R_3 is G.

36. A compound of claim 1, wherein one of R_2 and R_3 is W, and W is a heterocyclyl selected from: pyridyl, pyrimidyl, furyl, thiofuryl, imidazolyl, oxazolyl, thiazolyl, 2,3-dihydro-indolyl, benzimidazolyl, tetrazolyl, triazolyl, and pyrrolyl.

37. A compound of claim 21, wherein R_5 is branched C_{3-5} alkyl.

38. A compound of claim 21, wherein R_5 is isopropyl or cyclopentyl.

39. A compound of claim 1, selected from 4-(4-Imidazol-1-yl-phenoxy)-1-isopropyl-piperidine, 4-(4-Imidazol-1-yl-phenoxy)-1-isobutyl-piperidine, 1-Isopropyl-4-(4-pyrrol-1-yl-phenoxy)-piperidine, and 5-Chloro-2-[4-(1-isopropyl-piperidin-4-yloxy)-phenyl]-1H-benzoimidazole.

40. A compound of claim 39, selected from 4-(4-Imidazol-1-yl-phenoxy)-1-isopropyl-piperidine, 4-(4-Imidazol-1-yl-phenoxy)-1-isobutyl-piperidine, and 5-Chloro-2-[4-(1-isopropyl-piperidin-4-yloxy)-phenyl]-1H-benzoimidazole.

41. A compound of claim 1, selected from [4-(1-Isopropyl-piperidin-4-yloxy)-phenyl]-phenyl-methanone, 4-(Biphenyl-4-yloxy)-1-isopropyl-piperidine, 4-(4-Benzyloxy-phenoxy)-1-isopropyl-piperidine, 1-Isopropyl-4-(4-phenoxy-phenoxy)-piperidine, 4-(4-Benzyl-phenoxy)-1-isopropyl-piperidine, [4-(1-Isopropyl-piperidin-4-yloxy)-phenyl]-phenyl-methanol, N-[4-(1-Isopropyl-piperidin-4-yloxy)-phenyl]-acetamide, 4-(4-Cyclopentyl-phenoxy)-1-isopropyl-piperidine, 4-(1-Cyclopentyl-piperidin-4-yloxy)-benzonitrile, 4-(1-Cyclobutyl-piperidin-4-yloxy)-benzonitrile, 4-(1-sec-Butyl-piperidin-4-yloxy)-benzonitrile, 4-(1-Isopropyl-piperidin-4-yloxy)-benzaldehyde, 4-(1-Cyclohexyl-piperidin-4-yloxy)-benzonitrile, 4-(1-Isopropyl-piperidin-4-yloxy)-benzonitrile, 4-(1-Cyclopropylmethyl-piperidin-4-yloxy)-benzonitrile, and 4-(1-Isobutyl-piperidin-4-yloxy)-benzonitrile, 4-(1-Propyl-piperidin-4-yloxy)-benzonitrile.

42. A compound of claim 1, selected from 4-(Biphenyl-4-yloxy)-1-isopropyl-piperidine, 4-(4-Benzyloxy-phenoxy)-1-isopropyl-piperidine, 4-(4-Benzyl-phenoxy)-1-isopropyl-piperidine, 1-Isopropyl-4-(4-phenoxy-phenoxy)-piperidine, and N-[4-(1-Isopropyl-piperidin-4-yloxy)-phenyl]-acetamide.

43. A compound of claim 1, selected from 1-Isopropyl-4-[4-(1-isopropyl-piperidin-4-yloxy)-phenyl]-piperazine, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-phenyl]-piperazine, and 1-[4-(1-Isopropyl-piperidin-4-yloxy)-phenyl]-piperazine.

44. A compound of claim 1, selected from 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-piperidine, 4-[4-(1-sec-Butyl-piperidin-4-yloxy)-benzyl]-morpholine, 1-[4-(1-Cyclopentyl-piperidin-4-yloxy)-benzyl]-piperidine, 1-[4-(1-Isobutyl-piperidin-4-yloxy)-benzyl]-piperidine, 1-N-Isopropyl-4-{4-[5-(1-isopropyl-piperidin-4-ylsulfanyl)-tetrazol-1-yl]-phenoxy}-piperidine, {1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-piperidin-4-yl}-methanol, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-4-methyl-[1,4]diazepane, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-azepane, 1-[4-(1-Isobutyl-piperidin-4-yloxy)-benzyl]-piperidine, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-piperidin-4-ol, [4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-methyl-(1-methyl-piperidin-4-yl)-amine, 1-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-4-benzyl-piperidine, N-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-N,N',N'-trimethyl-ethane-1,2-diamine, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-4-methyl-piperazine, Cyclohexyl-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-methyl-amine, Butyl-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-methyl-amine, 4-[4-(1-Cyclopentyl-piperidin-4-yloxy)-benzyl]-morpholine, 1-Isopropyl-4-(4-pyrrolidin-1-

ylmethyl-phenoxy)-piperidine, Diethyl-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-amine, 4-[4-(1-sec-Butyl-piperidin-4-yloxy)-benzyl]-morpholine, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-4-phenyl-piperazine, 1-Benzyl-4-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-piperazine, 4-[4-(4-Benzylidene-piperidin-1-ylmethyl)-phenoxy]-1-isopropyl-piperidine, 4-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-morpholine, [4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-dimethyl-amine, 4-[4-(1-Cyclohexyl-piperidin-4-yloxy)-benzyl]-morpholine, 4-[4-(1-Isobutyl-piperidin-4-yloxy)-benzyl]-morpholine, 4-[4-(1-Propyl-piperidin-4-yloxy)-benzyl]-morpholine, 1-[4-(1-Cyclohexyl-piperidin-4-yloxy)-benzyl]-piperidine, 1-[4-(1-Benzyl-piperidin-4-yloxy)-benzyl]-piperidine, 1-[4-(1-Cyclohexylmethyl-piperidin-4-yloxy)-benzyl]-piperidine, and 4-[4-(4-Piperidin-1-ylmethyl-phenoxy)-piperidin-1-yl]-butan-2-one.

45. A compound of claim 1, selected from 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-piperidine, 4-[4-(1-sec-Butyl-piperidin-4-yloxy)-benzyl]-morpholine, 1-[4-(1-Cyclopentyl-piperidin-4-yloxy)-benzyl]-piperidine, 1-[4-(1-Isobutyl-piperidin-4-yloxy)-benzyl]-piperidine, 1-N-Isopropyl-4-{4-[5-(1-isopropyl-piperidin-4-ylsulfanyl)-tetrazol-1-yl]-phenoxy}-piperidine, {1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-piperidin-4-yl}-methanol, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-4-methyl-[1,4]diazepane, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-azepane, 1-[4-(1-Isobutyl-piperidin-4-yloxy)-benzyl]-piperidine, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-piperidin-4-ol, [4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-methyl-(1-methyl-piperidin-4-yl)-amine, 1-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-4-benzyl-piperidine, N-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-N,N',N'-trimethyl-ethane-1,2-diamine, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-4-methyl-piperazine, Cyclohexyl-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-methyl-amine, Butyl-[4-(1-

isopropyl-piperidin-4-yloxy)-benzyl]-methyl-amine, 4-[4-(1-Cyclopentyl-piperidin-4-yloxy)-benzyl]-morpholine, 1-Isopropyl-4-(4-pyrrolidin-1-ylmethyl-phenoxy)-piperidine, Diethyl-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-amine, 4-[4-(1-sec-Butyl-piperidin-4-yloxy)-benzyl]-morpholine, 1-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-4-phenyl-piperazine, 1-Benzyl-4-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-piperazine, 4-[4-(4-Benzylidene-piperidin-1-ylmethyl)-phenoxy]-1-isopropyl-piperidine, 4-[4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-morpholine, [4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-dimethyl-amine, 4-[4-(1-Cyclohexyl-piperidin-4-yloxy)-benzyl]-morpholine, and 4-[4-(1-Isobutyl-piperidin-4-yloxy)-benzyl]-morpholine.

46. A compound of claim 1, selected from Cyclopropyl-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-amine, [4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-(5-methyl-pyridin-2-yl)-amine, [4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-pyridin-2-yl-amine, [4-(1-Isopropyl-piperidin-4-yloxy)-benzyl]-phenyl-amine, and (5-Chloro-pyridin-2-yl)-[4-(1-isopropyl-piperidin-4-yloxy)-benzyl]-amine.

47. A compound of claim 1 or 23, isotopically labelled to be detectable by PET or SPECT.

48. A pharmaceutical composition, comprising a compound of claim 1 and a pharmaceutically acceptable carrier.

49. A method of inhibiting histamine H_3 receptor activity in a subject, comprising administering an effective amount of a compound of claim 1, 23, 45, or 46 to a subject in need of such inhibition of histamine H_3 receptor activity.

50. A method of treating a subject having a disease or condition modulated by histamine H_3 receptor activity, comprising administering to the subject a therapeutically effective amount of a compound of claim 1, 23, 45, or 46.

51. A method of claim 50, wherein said disease or condition is selected from the group consisting of sleep/wake disorders, arousal/vigilance disorders, migraine, asthma, dementia, mild cognitive impairment (pre-dementia), Alzheimer's disease, epilepsy, narcolepsy, eating disorders, motion sickness, vertigo, attention deficit hyperactivity disorders, learning disorders, memory retention disorders, schizophrenia, nasal congestion, allergic rhinitis, and upper airway allergic response.

52. A method for treating a disease or condition modulated by at least one receptor selected from the histamine H_1 receptor and the histamine H_3 receptor, said method comprising (a) administering to a subject a jointly effective amount of a histamine H_1 receptor antagonist compound, and (b) administering to the subject a jointly effective amount of a compound of claim 1, 23, 45, or 46, said method providing a jointly therapeutically effective amount of said compounds.

53. The method of claim 52 wherein the histamine H_1 receptor antagonist and the compound of claim 1, 23, 45, or 46 are present in the same dosage form.

54. A method for treating diseases or conditions modulated by at least one receptor selected from the histamine H_2 receptor and the histamine H_3 receptor in a subject, comprising (a) administering to the subject a

jointly effective amount of a histamine H_2 receptor antagonist compound, and (b) administering to the subject a jointly effective amount of a compound of claim 1, 26, 27, or 41, said method providing a jointly therapeutically effective amount of said compounds.

55. The method of claim 54 wherein the histamine H_2 receptor antagonist and the compound of claim 1, 23, 45, or 46 are present in the same dosage form.

56. A method for treating one or more disorders or conditions selected from the group consisting of sleep/wake disorders, narcolepsy, and arousal/vigilance disorders, comprising administering to a subject a therapeutically effective amount of a compound of claim 1, 23, 45, or 46.

57. A method for treating attention deficit hyperactivity disorders (ADHD), comprising administering to a subject a therapeutically effective amount of a compound of claim 1, 23, 45, or 46.

58. A method for treating one or more disorders or conditions selected from the group consisting of dementia, mild cognitive impairment (pre-dementia), cognitive dysfunction, schizophrenia, depression, manic disorders, bipolar disorders, and learning and memory disorders, comprising administering to a subject a therapeutically effective amount of a compound of claim 1, 23, 45, or 46.

59. A method for treating or preventing upper airway allergic response, nasal congestion, or allergic rhinitis, comprising administering to a

subject a therapeutically effective amount of a compound of claim 1, 23, 45, or 46.

60. A method for studying disorders mediated by the histamine H_3 receptor, comprising using an ^{18}F-labeled compound of claim 1 or 23 as a positron emission tomography (PET) molecular probe.